UCLA Latino Policy & Politics Institute

SALTON SEA EXCEEDANCES OF CALIFORNIA'S AIR-QUALITY STANDARDS HIGHLIGHT GOVERNANCE GAPS AND MONITORING NEEDS

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EXECUTIVE SUMMARY

The Salton Sea region is known for its poor air-quality, which is often linked to dust and contributes to alarmingly high rates of respiratory problems among residents. However, air-quality issues extend beyond dust. Residents also face the distressing reality of frequent hydrogen sulfide (H2S) emissions. Depending on individual experiences, these emissions can range from uncomfortable to severely suffocating.

To gauge the severity of these concerns, the Salton Sea Environmental Timeseries (SSET), a community-based research group, recently installed two hydrogen sulfide monitors in the area. Their data indicates that H_2S emissions consistently exceed the California Air Resources Board state standard of 30 parts per billion (ppb), with 243 hours above this threshold recorded between May and September 2024 alone. Existing government air-quality monitors, located north of the Salton Sea, primarily detect H_2S only when winds blow from the southeast, whereas SSET data show elevated emissions occur regardless of wind direction. This highlights a critical gap in the current government monitoring network, which fails to capture the full scope of H_2S pollution.

As more data highlight connections between water and air-quality, it is crucial to monitor air-quality in all its aspects, not just those related to dust. The Salton Sea region has a predominantly low-income Latinx, immigrant, and Indigenous population across two California counties. The persistent issue of hydrogen sulfide pollution serves as a clear example of environmental injustice. For over two decades, the state and federal governments have been legally obligated to restore the Salton Sea—meeting that obligation today means pairing public health action with robust monitoring. To meet these obligations, the State must adopt the following policies to accelerate and strengthen restoration:

1. Enforcing and Reviewing Hydrogen Sulfide Standards
2. Creating a Unified Salton Sea Air and Water Quality Authority and Expanding H_2S Monitoring
3. Coordinate Community Health and Organizational Support
4. Ensure Community-Led Repurposing of the Contaminated Playa

INTRODUCTION

The Salton Sea region, located in Southern California, has a rich history of Indigenous community presence, recreation, and development.[1] Today, it is a highly saline lake, with salinity levels around 80 parts per thousand (ppt), facing significant challenges

due to extremely high nutrient levels and frequent low oxygen concentrations.[2] While dust has long been a concern, the lake's release of hydrogen sulfide (H_2S)—a toxic, suffocating gas—has emerged as a pressing issue, contributing to the serious health impacts already caused by dust exposure for residents. Recent preliminary findings from multiday workshops and focus groups in the Salton Sea region, conducted by members of SSET, indicate that individuals are experiencing chronic physical issues and anxiety related to declining air-quality. These problems include ongoing respiratory conditions such as asthma,[3] frequent nosebleeds and headaches, and an inability to escape the foul odor, often described as a persistent "rotten egg" smell, especially in hot and humid conditions.[4]

The predominantly Latinx, immigrant and Indigenous communities, which make up between 60% and 99% of residents, face significant challenges, with median household incomes ranging from $23,000 to $42,000, depending on the specific community.[5] These communities often have limited access to essential resources, such as medical care or information about air pollution, yet may face the largest consequences from living near pollution sources.[6] There are growing concerns about whether state-operated air-quality sensors accurately capture pollutant levels, potentially leading to inadequate regulatory responses, thus leaving communities without the necessary support to address their health and environmental concerns.[7]

To fill the gaps in research and governmental support, the Salton Sea Environmental Timeseries (SSET; saltonseascience.org) was founded in 2021 as a community-driven research collective. SSET is a collaboration between local residents, the nonprofit organization Alianza Coachella Valley, and academics from the University of California Los Angeles (UCLA), Loma Linda University, and Brown University. Since its founding, SSET has led efforts to monitor air-quality around the Sea, with a particular focus on H_2S—a compound once designated as a hazardous air pollutant under the U.S. Clean Air Act.[8]

DATA AND METHODOLOGY

The analysis in this brief was conducted by SSET researchers, employing a combination of air- and water-quality sensors. To measure air-quality, SSET deployed Aeroqual AQS-1 hydrogen sulfide monitors at two locations: one in the northern Salton Sea and another in the southern region, both positioned over the water (Figure 1). This brief focuses on data from the northern H_2S monitor, as it provides a more extensive dataset running from August 29, 2023, to the present. This brief also includes a comparison between the SSET H_2S sensors and the South Coast Air Quality Monitoring District (SCAQMD) monitors located north of the lake (Figure 1).

Additionally, we present data from a portable Jerome J605 H_2S analyzer, used to measure

hydrogen sulfide concentrations along the Salton Sea shoreline. This instrument collected data in one-second increments, allowing us to examine spatial gradients of H_2S emissions at various locations.

Figure 1. Map of H_2S Sensor Locations

Note: Location includes sensors operated by the SCAQMD and SSET, with sensors at SSET North (SSET-N) and SSET South (SSET-S). The background is a LANDSAT image from May 16, 2025, depicting a bloom visible from satellite imagery.

FINDINGS

Finding 1: The Salton Sea emits H_2S at concentrations that regularly exceed California air-quality standards.

Data from the H_2S sensors deployed over the Salton Sea by SSET indicate that concentrations frequently exceed California's one-hour air-quality standard of 30 parts per billion (ppb).[9]

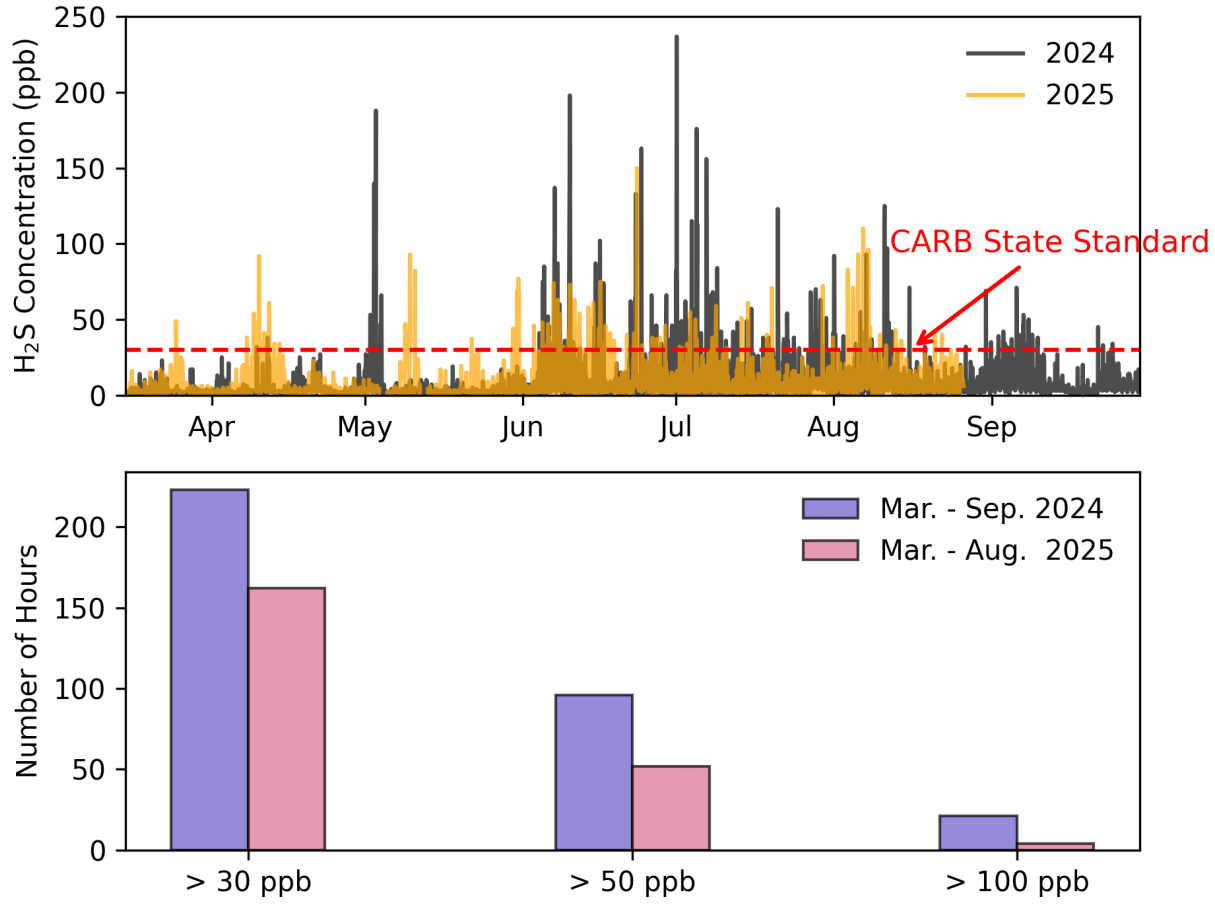
- 2024: Between March 15 and September 30, H_2S concentrations above 30 ppb were

recorded for a cumulative total of 223 hours at the SSET-N monitoring station. Within this period, levels exceeded 50 ppb for 96 hours, surpassed 100 ppb for 21 hours, and reached a peak of 237 ppb (Figure 2). The highest 24-hour average concentration was 42 ppb.

- 2025: Between March 15 and August 26, concentrations above 30 ppb, 50 ppb, and 100 ppb occurred for cumulative totals of 162 hours, 52 hours, and 4 hours, respectively (Figure 2).

While chronic exposure to H_2S has been studied less extensively than acute exposure, existing research links long-term exposure to a range of adverse health outcomes, including shortness of breath, fatigue, memory loss, headaches, and stress.[10]

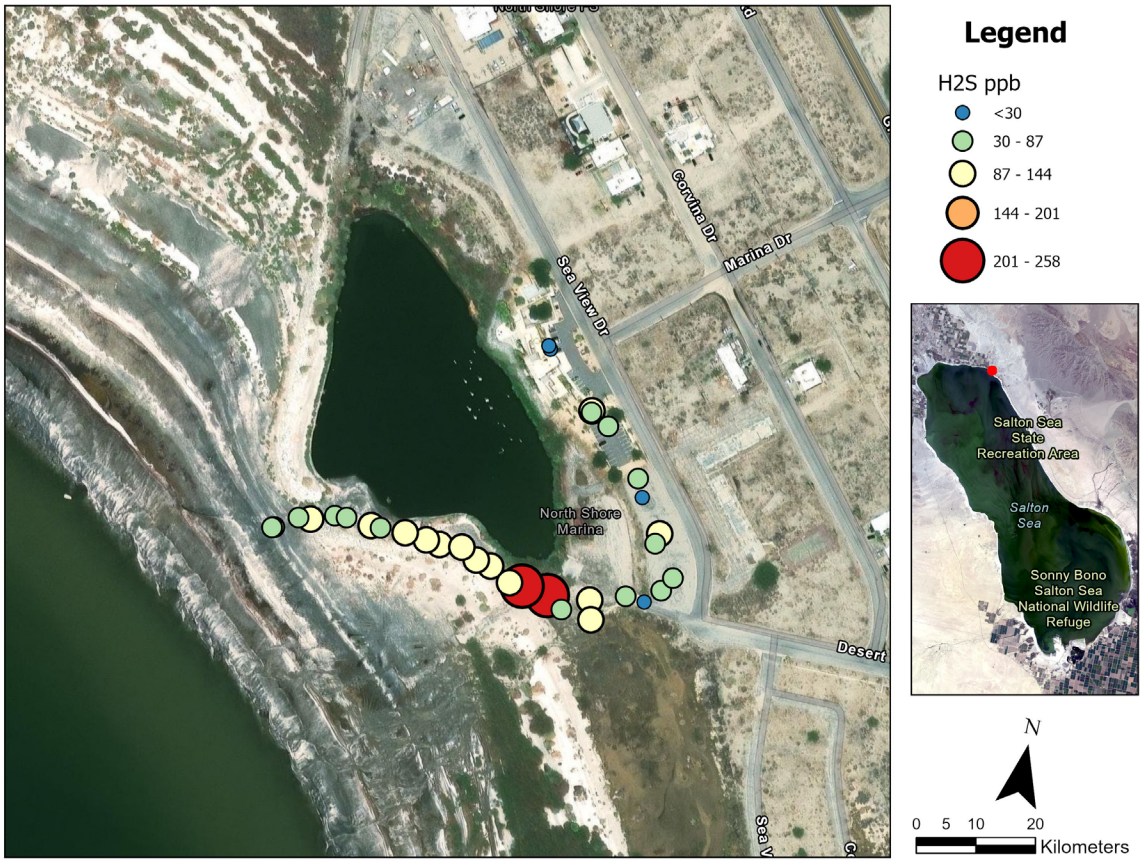
Figure 2. Hourly Average Concentrations of H_2S and Duration of Hours Observing Specific H_2S Concentration Thresholds



Note: Average concentrations of hydrogen sulfide are measured by the SSET-N station over the Salton Sea (refer to Figure 1). The dashed red line represents the CARB state standard, which should not be exceeded. The duration of hours observing specific H_2S concentration includes thresholds >30 ppb, >50 ppb, >100 ppb at SSET-N. 2024 covers a longer monitoring period than 2025.

The Salton Sea is the primary source of the hydrogen sulfide emissions in the surrounding community.[11] Measurements from the SSET portable Jerome sensor further support this, showing elevated H_2S concentrations as one approaches the lake's shoreline (Figure 3). While SSET continues to investigate the roles of deep lake overturning, shallow waters, and exposed playa dust in driving H_2S emissions, early findings indicate that falling water levels are likely to intensify emissions in the near term.

Figure 3. H_2S Concentrations

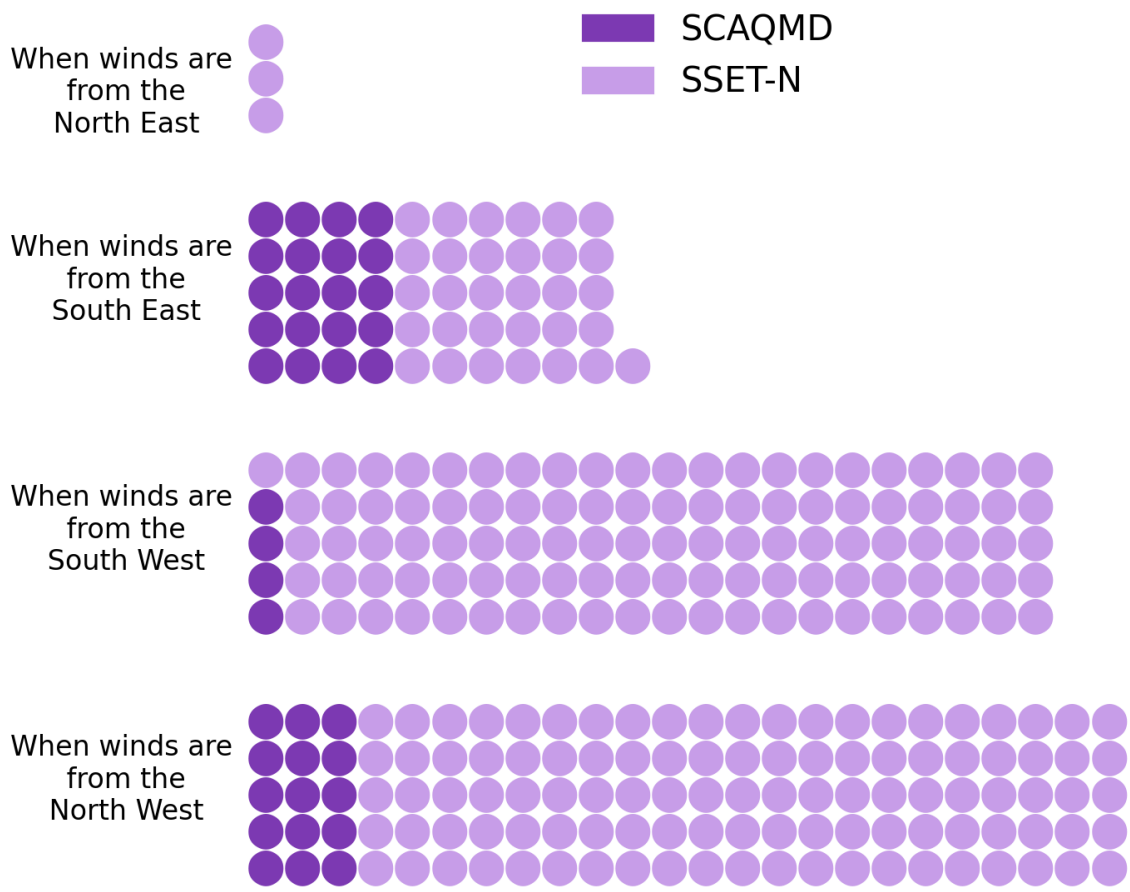


Note: H_2S concentrations were measured by the Jerome J605 H_2S analyzer near the Salton Sea Yacht Club on August 29-30, 2024. The inset map is a LANDSAT image from May 16, 2025.

Finding 2: Insufficient H2S Monitoring in the Salton Sea

Across 2024, our SSET H_2S monitors recorded more than six times the exceedances of the 30 ppb state standard than the SCAQMD monitors. As shown in Figure 4, the most significant discrepancies between H_2S concentrations measured by the SSET and SCAQMD sensors occur when winds originate from the southwest, west, and northwest. The location of the SCAQMD monitor, situated northwest of the Alianza sensor, suggests that its measurements primarily reflect detections rather than emissions. By monitoring only the northern Salton Sea, SCAQMD leaves a substantial portion of H_2S emissions unaccounted for, thus underrepresenting the severity of the issue.

Figure 4. Discrepancies in the Number of Hours when H_2S Concentrations Exceed the CARB State Standard



Note: The CARB State standard is 30 parts per billion (ppb). Discrepancies in the number of hours are categorized by wind direction. The SCAQMD sensor is located to the north of the Salton Sea, while the SSET-N sensor, positioned over the lake, is surrounded by deep water to the southeast, shallow water to the northeast, and a combination of shallow water and mud to the northwest and southwest (refer to Figure 1 for a map of the locations). The data depicted covers *only the year 2024*. Wind directions are grouped into quadrants, with "northeast" representing all winds from 0° to 90°, and similarly for the other cardinal sectors.

Finding 3: Current H_2S Standards are an insufficient metric for air quality.

Currently, no unified hydrogen sulfide standard across state and federal agencies exists, leading to significant inconsistencies in monitoring practices. CARB established the current one-hour H_2S standard of 30 parts per billion (ppb) in 1969.[12] On a federal level, the U.S. Environmental Protection Agency (EPA) ceased monitoring H_2S after public law amendments removed it from pollutant watchlists in 1991.[13] Given that the rate of H_2S exceedances remains steady, there is a clear need for uniform H_2S standards at all levels of government to ensure accurate representation of these issues. Other amendments are also needed; for instance, California's current H_2S standard does not account for humidity, even though previous studies have demonstrated that it exacerbates the

adverse effects of H_2S exposure.[14] Preliminary findings by SSET researchers (not included in this brief) also indicate that humidity intensifies odor impacts when H_2S levels fall between 10–30 ppb—evidence that the state standard should be revised to explicitly account for humidity.

POLICY RECOMMENDATIONS

Since the 2003 Quantification Settlement Agreement, California and the federal government have been legally bound—and financially responsible—for restoring the Salton Sea. To meet these obligations, the State must adopt the following policies to accelerate and strengthen restoration.

5. **Enforcing and Reviewing Hydrogen Sulfide Standards:** The State of California should prioritize the enforcement of CARB's H_2S standards to protect Salton Sea communities by ensuring that upstream sources of emissions are addressed. CARB should work with the State Water Resources Control Board and Regional Water Quality Control Boards to develop and implement H_2S reduction plans if air-quality standards are exceeded. These plans could include nutrient load reductions, sediment remediation, or targeted water-level management in specific zones. Water boards should submit progress reports on mitigation measures tied to enforceable deadlines, with noncompliance linked to financial penalties, corrective mandates, or restrictions on permits and funding. Community data from odor-reporting apps, local monitors such as SSET or IVAN, and community science initiatives should automatically trigger inspections and enforcement actions by the water boards. Enforcement must also account for weather and seasonal conditions, as humidity intensifies H_2S exposure. Additionally, California should lobby the EPA to establish a unified federal 1-hour H_2S standard with an enforcement program, ensuring that communities have consistent and meaningful protections nationwide. By combining interagency coordination, community-triggered enforcement, transparent reporting, and federal alignment, the state can make H_2S regulations actionable and hold upstream water agencies accountable.

6. **Creating a Unified Salton Sea Air and Water Quality Authority and Expanding H_2S Monitoring:** Riverside and Imperial counties should establish a Unified Salton Sea Air and Water Quality Authority that includes tribal leadership, the South Coast Air Quality Management District (SCAQMD), and the Imperial County Air Pollution Control District (ICAPCD) to identify and support communities affected by air- and water-quality impacts while ensuring enforcement of existing standards. Building on the Salton Sea Authority and Salton Sea Conservancy, which coordinate habitat restoration, this Authority should also oversee air-quality governance and coordinate with water-quality agencies to address upstream sources of pollution. The Authority should develop enforceable mitigation plans, conduct air-quality and public health assessments, and guide the distribution

of filters, medications, and other resources. Funding can be drawn from the $170 million state bond allocation for Salton Sea projects, AB 617 community air protection funds, and a portion of the Salton Sea Lithium Fund. This initiative should remain distinct from SB 534 and unrelated to lithium extraction.

The Authority should also expand H_2S monitoring infrastructure across both the Imperial and Coachella valleys, with funding from the pesticide mill assessment, the Salton Sea Lithium Fund, or AB 617 implementation funds. Expanding the sensor network will ensure comprehensive detection of air-quality exceedances and clarify the spatial distribution of H_2S. Data transparency should be prioritized by releasing information promptly and partnering with community organizations to host datasets online. Streamlined dashboards will allow residents to access, download, and visualize data, empowering communities to hold decision-makers accountable for monitoring, enforcement, and timely action.

7. **Community Health and Organizational Support:** To protect Salton Sea communities from the compounded impacts of poor air quality and limited healthcare access, a coordinated approach is urgently needed. Beginning January 1, 2026, the State of California will suspend new full-scope Medi-Cal enrollments for undocumented adults, making immediate targeted outreach essential. Counties, in partnership with local health organizations and advocacy groups, should actively lobby the California Department of Health and the State Legislature to maintain Medi-Cal coverage for undocumented adults in the region. At the same time, counties should strengthen ties with Federally Qualified Health Centers and philanthropic healthcare providers, such as AltaMed and St. John's Community Health Center, to ensure ongoing access to care. Both Imperial and Riverside counties should also press the state to declare a public health emergency due to chronic air contamination, unlocking emergency funding and resources for affected communities.

   Simultaneously, AB 617 Community Air Grant funds should be used to expand protections by distributing air purifiers, hosting educational workshops on mitigating H_2S exposure, and assisting residents with air filter applications. Trusted local organizations—including IV Equity, Comité Cívico del Valle, the Desert Healthcare District and Foundation's Air Quality Academy, and Indigenous tribes—should lead these efforts, ensuring that community knowledge and lived experiences guide program design. Aligning these initiatives with AB 617's Residential Air Filtration Program will maximize resources, avoid duplication, and strengthen impact. Building on successful models like Imperial County's IVAN network, which has improved accountability and shaped state air policy through collaboration among residents, regulators, and tribes, ensures that community engagement supports both equitable healthcare access and effective air-quality interventions.

8. **Community-Led Repurposing of the Contaminated Playa:** If hydrogen sulfide emissions are indeed coming from the lakebed sediments, it is essential to remediate the exposed playa areas before repurposing it for community use. Effective policy should support a two-step approach: (1) environmental mitigation to reduce toxic dust and harmful emissions, (2) investment in community-driven planning processes that allow residents safe and beneficial uses of the playa. The State of California already has frameworks for transforming previously deteriorated lands into community assets. The Ballona Creek Park to Playa initiative in the Los Angeles region converted degraded land into a 13-mile network of parks, trails and restored wetlands. This project exemplifies the importance of multi-agency collaboration and layered funding needed to reimagine space as greenspace and a place of cultural gatherings. Similarly, the Richmond Greenway in the Bay Area, the Taylor Yard G2 Restoration in Los Angeles, the Yurok Tribe's Upper Klamath River Tributary Post Dam Removal Salmonid Restoration Project, and the non-Californian example of the Brooklyn Bridge Park demonstrate how restoration can deliver both health protection and recreational value.

   In addition, the State Water Resources Control Board should review its existing programs and ensure they are applied intentionally at the Salton Sea with stronger provisions for community monitoring and accountability. Funding for these endeavors can be drawn from the $170 million state bond allocation for Salton Sea related projects, a portion of the Salton Sea Lithium Fund, and AB 617 Community Air Protection Program funds. Given the health risks associated with the playa, the counties should also urge the state to declare a state of emergency to unlock additional resources for remediation and protection of affected communities. This process must also place indigenous communities and local residents in leadership roles, ensuring that remediation and land use ultimately reflects community visions and cultural values.

NOTES

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ABOUT THE AUTHORS

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Alejandra G. Lopez is a PhD student in Earth, Environmental, and Planetary Sciences at Brown University, where her research focuses on the Salton Sea, combining remote sensing, air and water quality, and community science. A resident of the Eastern Coachella Valley, she began her environmental work as a volunteer community scientist before working as a consultant in Esri's Natural Resources team, supporting geospatial solutions for environmental management. She holds an MS from USC in Geographic Information Science and Technology and a BA from UCLA in International Development and Geography.

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Her research focuses on observational methods and utilizes field data to enhance our understanding of critical environmental challenges. Community involvement is central to both her research and its implementation.Born and raised in Puerto Rico, Arzeno-Soltero is particularly passionate about collaborating on issues that affect Latinx communities.